NIMA INTEGRATION TEST FACILITY

Presented to The
DoDIIS Test Process Oversight Committee (TPOC)
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by

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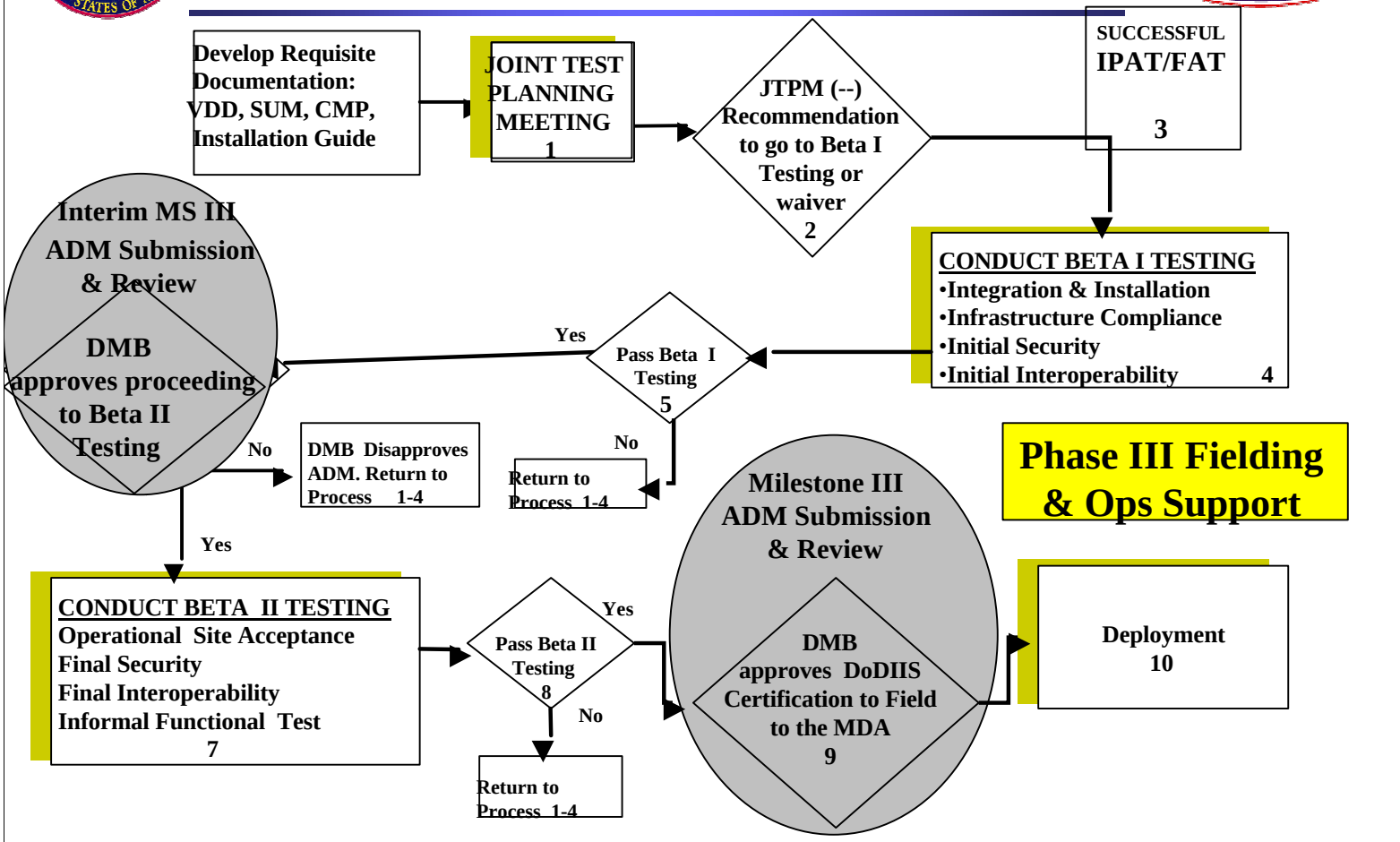
PURPOSE

Describe the
NIMA Integration Test Facility (ITF)
and its
Role within NIMA
and its
Current and Future Role
in the
DoDIIS Test Process

DoDIIS LCM PROCESS



OVERVIEW

- USIGS
- The Integration Test Facility
- ITF Processes
- ITF Facilities (Present)
- ITF Facilities (Future)
- Summary

WHAT IS USIGS?

The USIGS Operational Architecture development goal is to provide the IGC with seamless access to Imagery, Imagery Intelligence and Geospatial information

- USIGS must evolve from the current tailored, monolithic systems that are predominantly hardcopy production, storage, and distribution to an interoperable predominantly digital, electronic analysis and Information dissemination capability
- Development supports this goal as well as being in concert with the *C4ISR Framework* which defines a common approach to ensure that the USIGS Architecture will be inter-relatable between and among other organization's operational, systems, data, and technical architectures
- The key to providing seamless interoperability and data access for USIGS systems will be the increased use of commercial-off-the-shelf (COTS) products and compliance with the Defense Information Infrastructure Common Operating Environment (DII COE)

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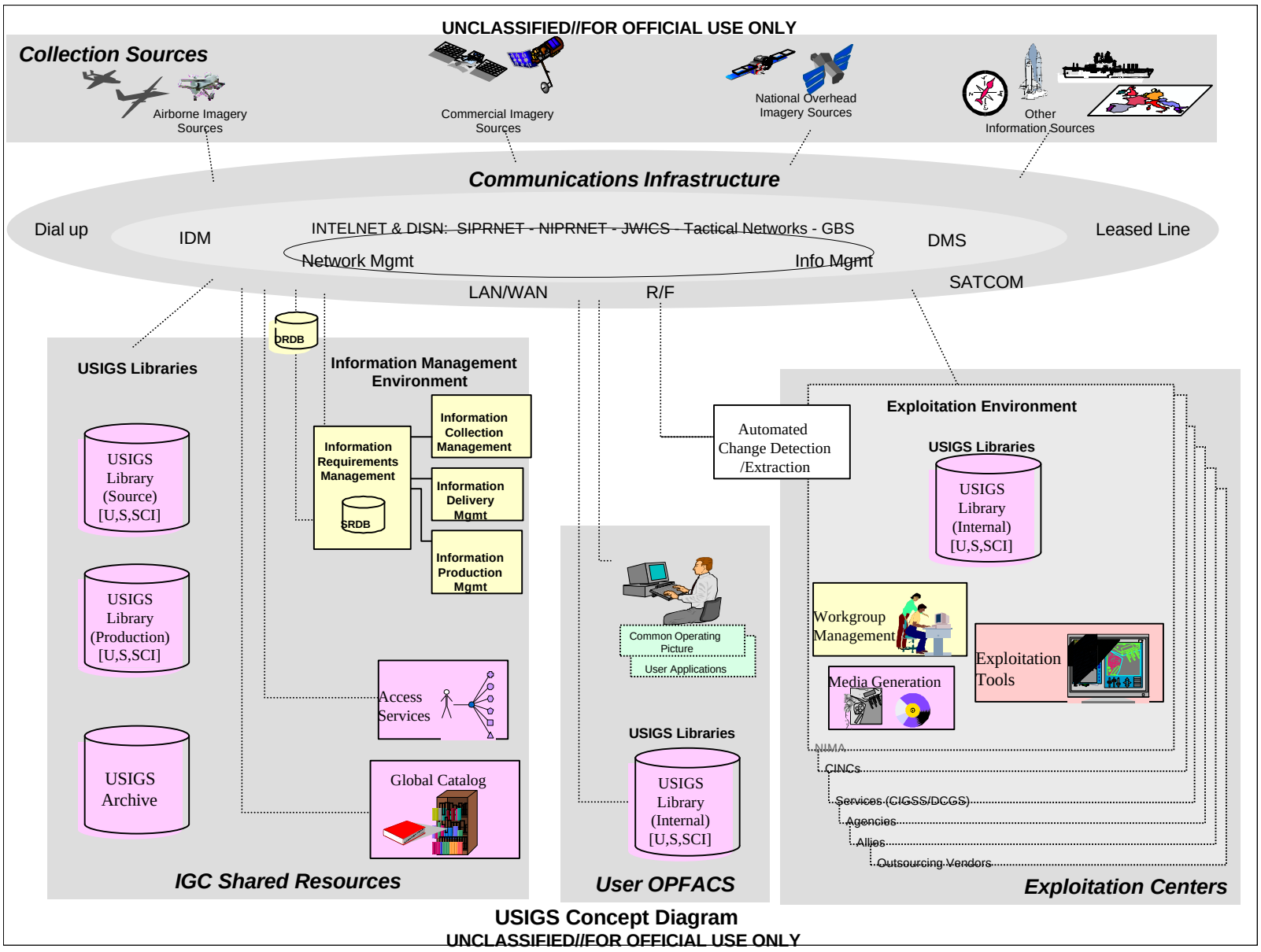

USIGS Concept Diagram

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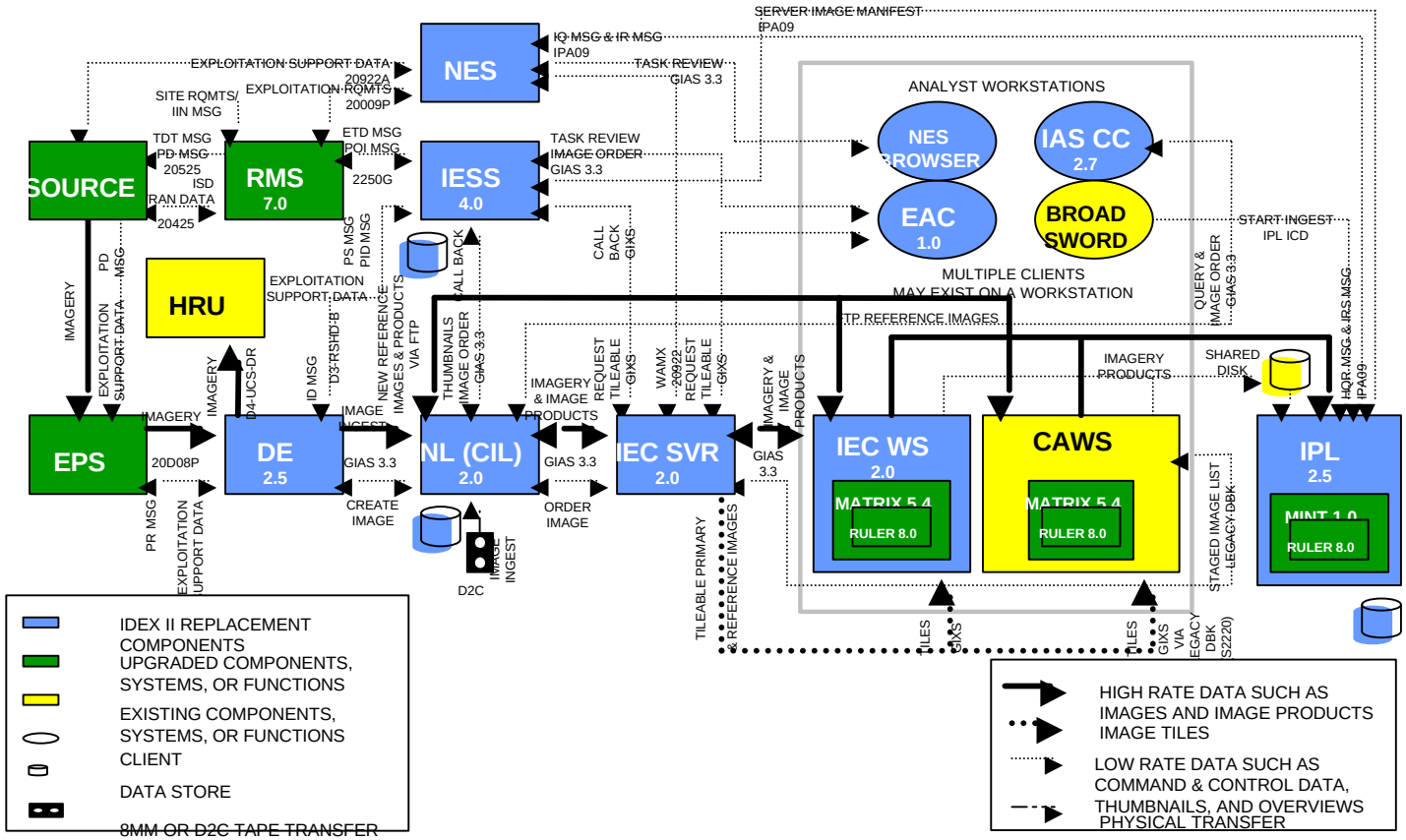
IDEX II Replacement Imagery Flows



(A Portion of USIGS)

What Does USIGS Mean for NIMA?

- NIMA USIGS
  - Incorporates elements and components of the former Defense Mapping agency, Central Imagery Office, Central Intelligence Agency, National Photographic Interpretation Center, Defense Intelligence Agency, National Reconnaissance Office, and the Services.
- A Major Automated Acquisition Program
- Milestone Decision Authority
- DoD 5000 Series Compliance
  - Process Tailoring
  - Cost As An Independent Variable
- Commercial Products
- Best Business Practices

What Does USIGS Mean for NIMA?

- Eliminates Multiple Approaches to Testing and Evaluation
  - Legacy components and planned NIMA systems acquisitions were created using varied and widely different system development life cycles and test and evaluation processes. As such, there was no one T&E approach and process model used. A need existed to standardized the way NIMA planned and implemented T&E.
- Standardizes Approach
  - The processes documented in the DoDD 5000.2-R and DoDIIS Instructions will be used in all NIMA system acquisition programs.

Documents in Development

- Transition Program Management Plan
- Transition and Integration Guidebooks
- Capstone USIGS Test and Evaluation Master Plan (TEMP)
- Capstone USIGS Training Plan
- Capstone Logistics Plan
- Capstone Security Plan
- Capstone Baseline Control Plan
- Integration Test Facility (ITF) CONOPS

Integration Test Facility

- Charter
  - To manage and support the execution of NIMA's transition to United States Imagery and Geospatial Information Services (USIGS) Architecture
- Purpose
  - Determine the operational suitability and the operational effectiveness of NIMA-USIGS segments
  - Define the configuration baseline of the approved NIMA-USIGS segments

Independent system-wide testing mimicking operational conditions

Mission, Vision, and Goals

- **Mission**
  - Assure the quality of systems delivered to operations by NIMA acquisition organizations through verification activities
    - Verification activities include test, demonstration, inspection, and analysis
  - Maximize value to the customer
  - Maintain control of the USIGS operational baseline.
- **Vision**
  - This vision of the ITF is to become a world-class verification facility, recognized as an advocate by NIMA's customers and acquisition organizations and as model to emulate by other verification organizations.

Mission, Vision, and Goals

- **Programmatic Goals**
  - Identify and report USIGS integration and verification issues as early in their development cycle as possible, as evidenced by active participation in technical exchange meetings and reviews of USIGS technical and programmatic information
  - Involve NIMA's customers and acquisition organizations early and throughout the verification process in planning, execution, and reporting activities
  - Ensure that the configuration of the USIGS operational baseline is always controlled
  - Ensure image and data quality standards are achieved and can be maintained over the life of the system

Mission, Vision, and Goals

- **Testing Goals**
  - Emulate, to the extent possible, an individual customer's operational environment
  - Ensure all verification activities produce accurate and repeatable results
  - Ensure USIGS capabilities are delivered into the operational baseline with minimal defects
  - Track and report defects in USIGS capabilities through Discrepancy Reports
  - Ensure that the USIGS operational baseline can be recreated at any point in the USIGS lifecycle
  - Manage the schedule and resources to ensure rapid and flexible resolution of problems with minimal impact to all customers

Mission, Vision, and Goals

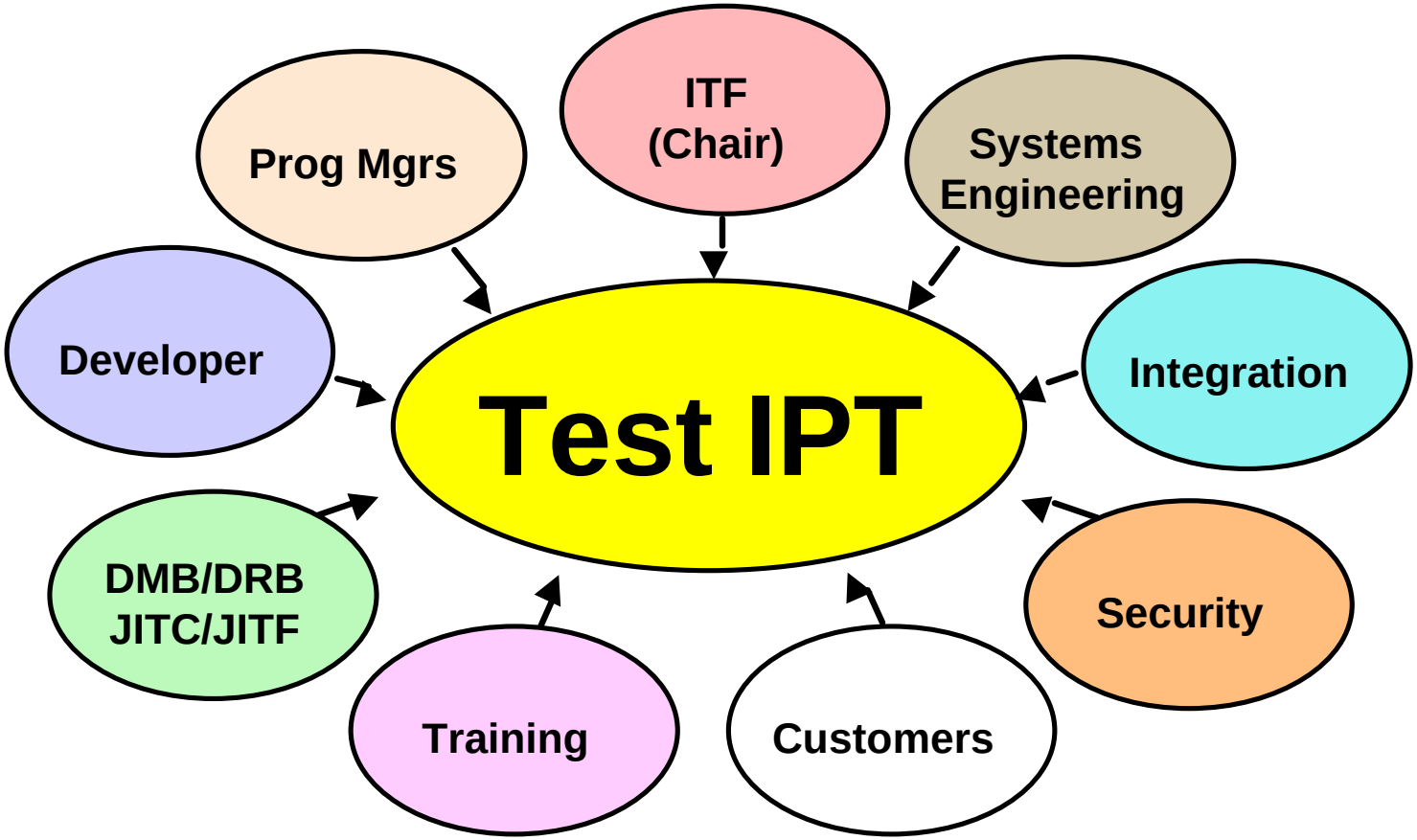
- **Business Goals**
  - Reduce the USIGS verification activity timeline for each USIGS development cycle (Effectivity cycle) while still meeting the other goals through process improvement efforts and reuse of information, test procedures, and test results
  - Have the ITF viewed not only as an "Integrated" Test Facility but also as the "Independent" Test Facility. The ITF serves as an "honest broker" between the developer, the acquisition office, and the customer to ensure that NIMA deploys systems that answer the "Critical Operational Issue" question.
    - ***Can the system perform its mission in its operational environment?***

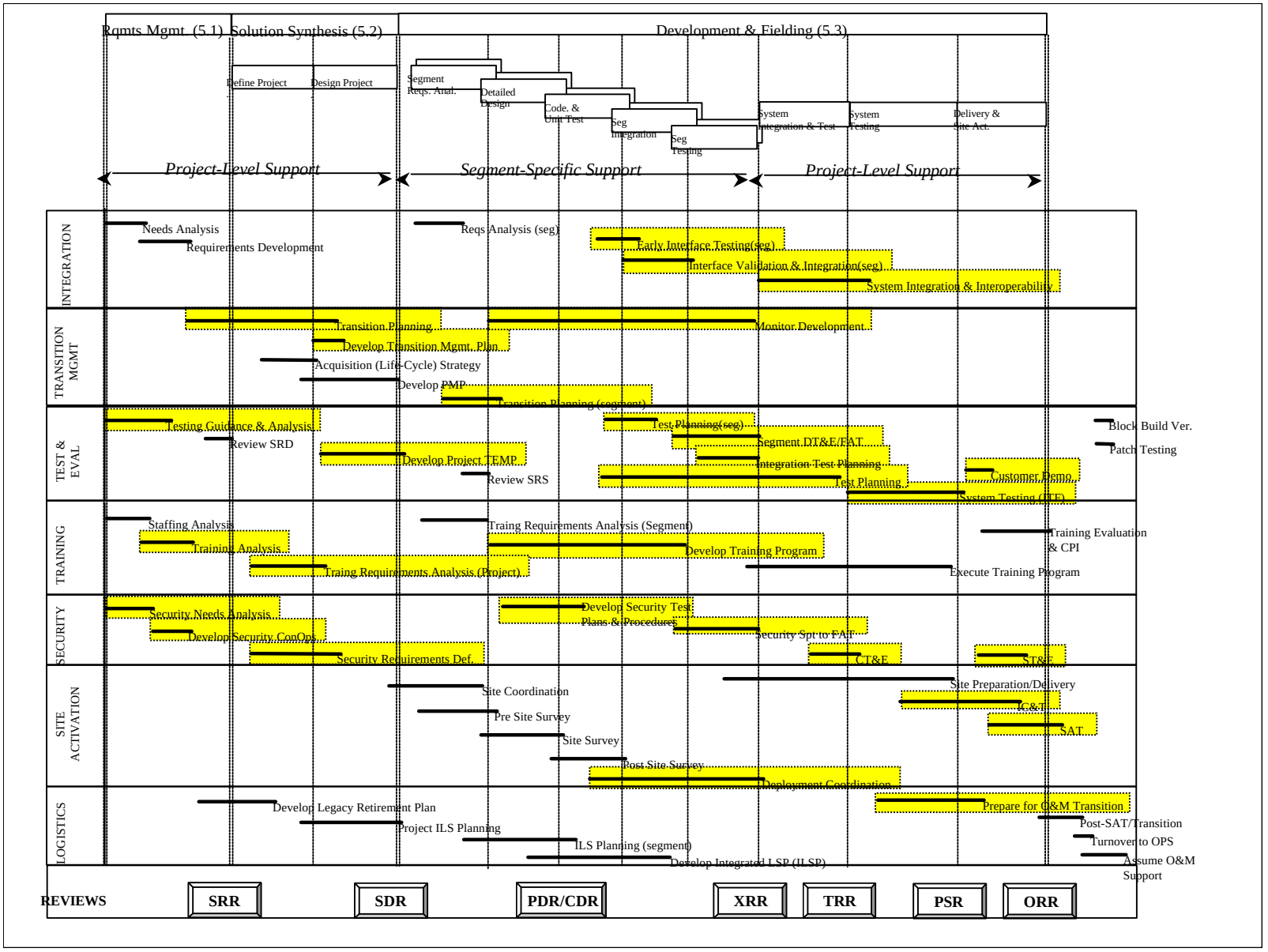
The ITF is the customer's and acquisition office's advocate

ITF Locations

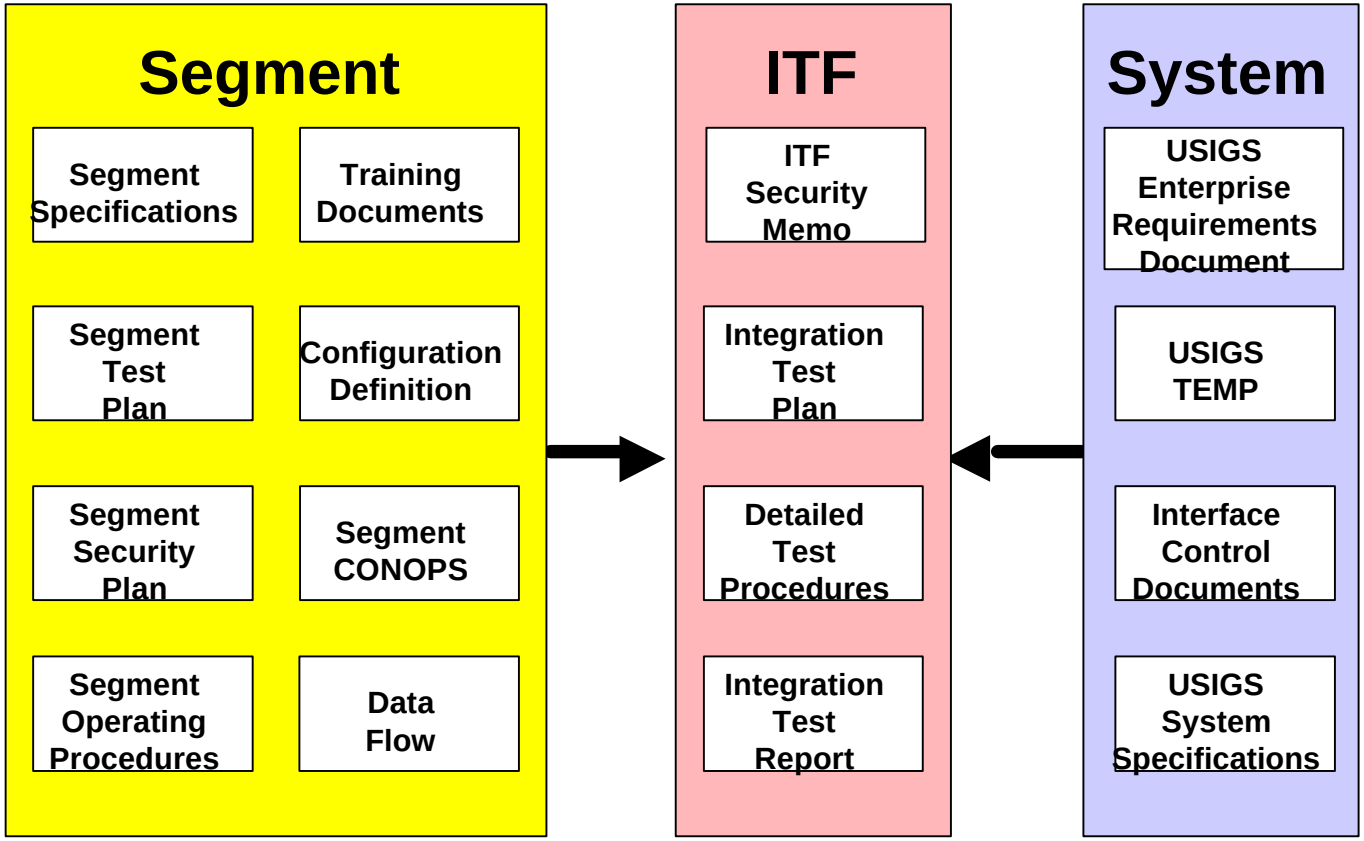
- **Newington, VA**
  - Externally deployed USIGS
- **Washington Navy Yard**
  - Internal Imagery Analysis systems
  - CIA-networked systems
- **Bethesda/Reston**
  - Geospatial production systems
- **St. Louis**
  - NIMA Corporate Applications

Test Integrated Program Team

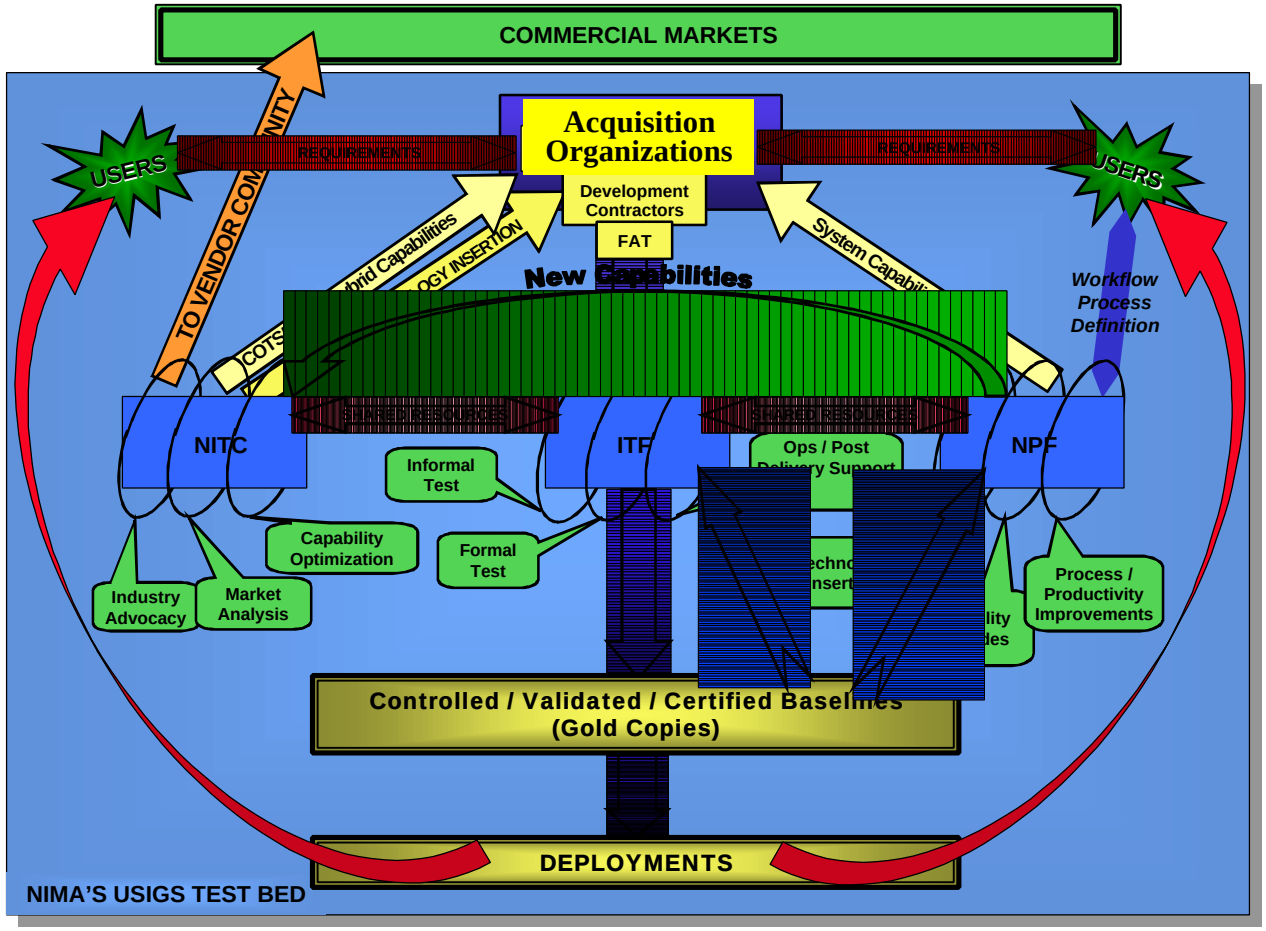



Rqmts Mgmt. (5.1)
Solution Synthesis (5.2)
Development & Fielding (5.3)
Refine Project
Design Project
Segment Reqs. Anal.
Detailed Design
Code. & Unit Test
Seg Integration
Seg Testing
System Integration & Test
System Testing
Delivery & Site Act.
Project-Level Support
Segment-Specific Support
Project-Level Support
INTEGRATION
Needs Analysis
Requirements Development
Reqs Analysis (seg)
Early Interface Testing(seg)
Interface Validation & Integration(seg)
System Integration & Interoperability
TRANSITION MGMT
Transition Planning
Monitor Development
Develop Transition Mgmt. Plan
Acquisition (Life-Cycle) Strategy
Develop PMP
Transition Planning (segment)
TEST & EVAL
Testing Guidance & Analysis
Review SRD
Develop Project TEMP
Review SRS
Test Planning(seg)
Segment DT&E/FAT
Integration Test Planning
Test Planning
Customer Demo
System Testing (TE)
Block Build Ver.
Patch Testing
TRAINING
Staffing Analysis
Training Analysis
Traing Requirements Analysis (Project)
Traing Requirements Analysis (Segment)
Develop Training Program
Execute Training Program
Training Evaluation & CPI
SECURITY
Security Needs Analysis
Develop Security ConOps
Security Requirements Def.
Develop Security Test Plans & Procedures
Security Spt to FAT
CT&E
ST&E
SITE ACTIVATION
Site Coordination
Pre Site Survey
Site Survey
Post Site Survey
Deployment Coordination
Site Preparation/Delivery
IC&T
SAT
LOGISTICS
Develop Legacy Retirement Plan
Project ILS Planning
ILS Planning (segment)
Develop Integrated LSP (ILSP)
Prepare for O&M Transition
Post-SAT/Transition
Turnover to OPS
Assume O&M Support
REVIEWS
SRR
SDR
PDR/CDR
XRR
TRR
PSR
ORR

Test Documents and Information Flow



How the ITF Fits



ITF Processes

- **Transition & Integration Guidebook is the cornerstone**
  - Contains specific transition requirements/activities that a development is to perform
  - Utilizes DoDD 5000 and NIMA PID are the 'Frames of Reference' detailing specific transition & integration activities within the acquisition life-cycle
  - Processes are tailorable, scalable, and repeatable and can be applied to a single segment or a multiple segment transition by transition or segment staff
- **Processes are documented in two separate volumes:**
  - SOST-STD-0001 Transition & Integration Volume 1 (Contract)
  - SOST-STD-0002 Transition & Integration Volume 2 (Implementation/Methods)

ITF Processes

- **SOST-STD-0001Transition & Integration Volume 1 (Contract)**
  - The generic contract (or binding agreement) between the developing organizations and the ITF on integration requirements/activities that are necessary.
  - Identifies the “handoff” requirements
  - Identifies the integration and test activities that must be initially addressed during pre-planning of a project effort
  - ITF requirements/activities are categorized and presented in terms of the acquisition life-cycle periods including:
    - Integration
    - Test & Evaluation
    - Security

ITF Processes

- **SOST-STD-0002 Transition & Integration Volume 2 (Implementation/Methods)**
  - Represents the encapsulated implementation specifics not visible to developing organizations
  - Defines all processes (both phase-dependent and phase-independent) necessary to effectively perform project-specific transition activities
  - Processes defined using ETVX (Entry-Task-Verification-Exit) paradigm
  - Volume 2 documents the following internal process mechanics:
    - Detailed Process Definitions: using ETVX
    - Generic WBS: to track resources applied against all activities
    - Management Decision Framework: to evaluate all transition activities across all USIGS Projects

One Critical Operational Issue

- **Can the system perform its mission in its operational environment?** Test and evaluation must address the following:
  - Performance and Functionality
    - Does the USIGS performance and functionality meet operational mission requirements in steady state and during surge/crisis operations?
  - Compatibility, Integration, and Interoperability (CII)
    - Does the USIGS meet the CII requirements to effectively interact with operational baseline systems?
  - Vulnerability and Survivability
    - Does the USIGS provide the security to withstand AIS network assaults and can survive manmade and natural calamities and disasters?
  - Suitability
    - Is the USIGS usable in the operational environment to meet operational demands?
  - RM&A
    - Does USIGS meet the reliability, maintainability, and availability mission requirements?

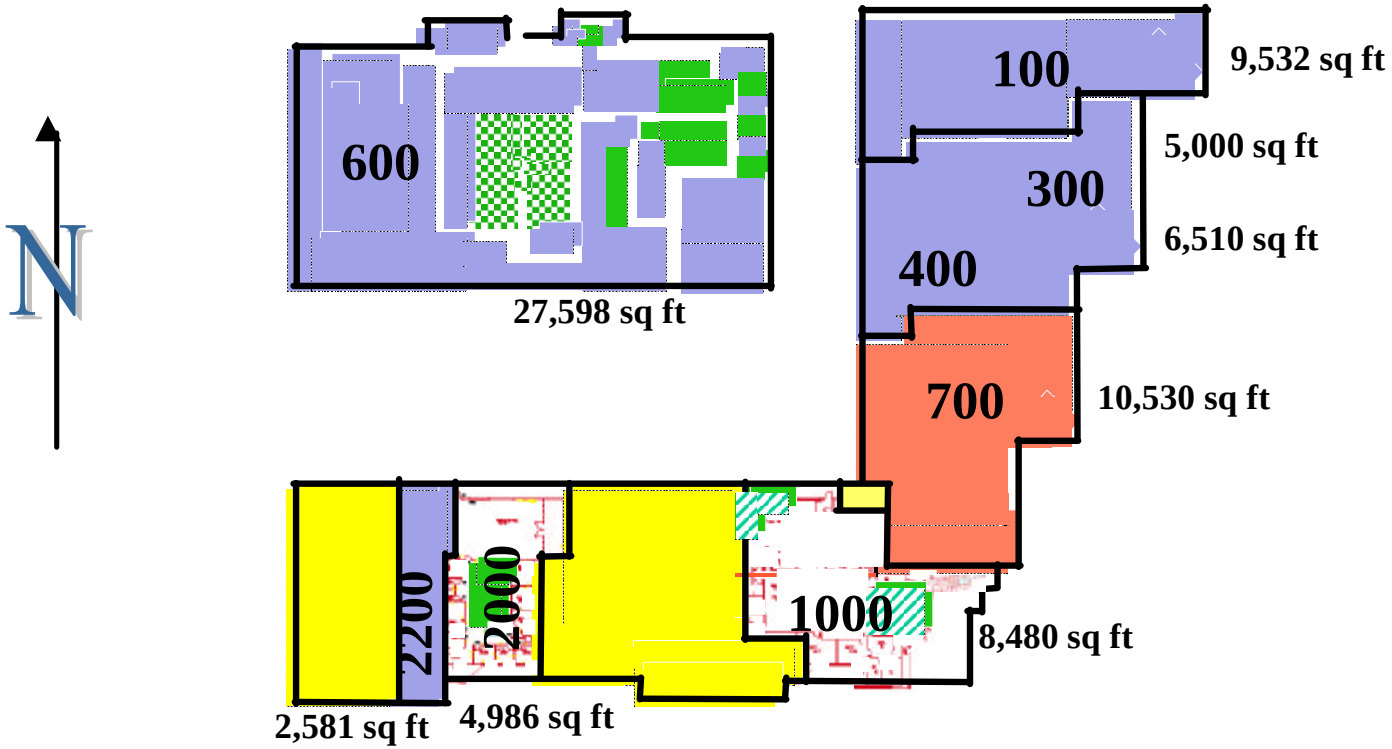
Resident ITF-Newington Systems

- Dissemination Element (DE)
- NIMA Library (NL)
- Integrated Exploitation Capability (IEC)
- Imagery Exploitation Support System (IESS)
- Information Access Service (IAS)
- Imagery Product Library (IPL)
- Imagery Data Exploitation II (IDEX II)
- Demand Driven Direct Digital Dissemination Server (5D)
- Requirements Management System (RMS Connectivity) (Mar 00)
- National Exploitation System (NES Connectivity) (Mar 00)

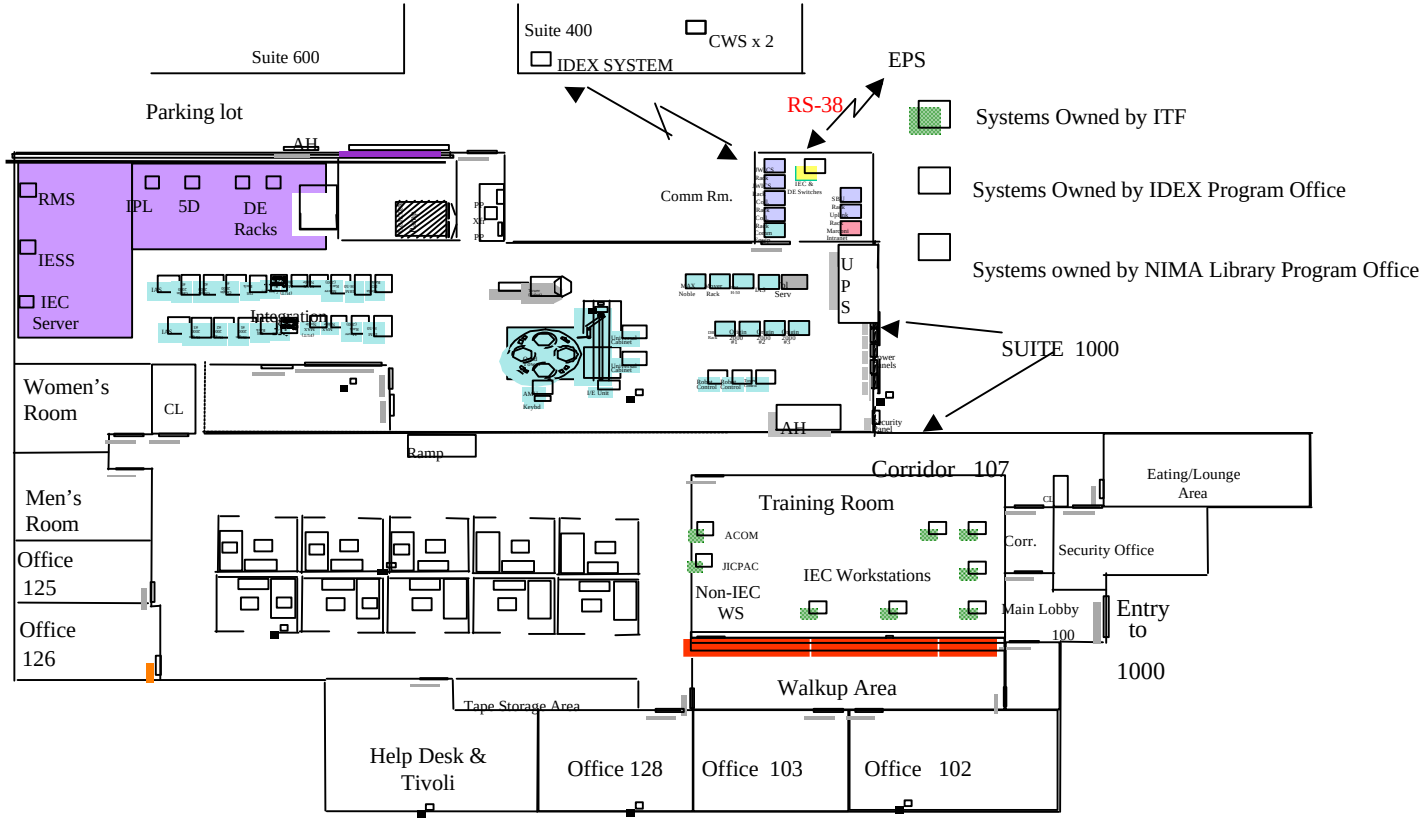
Newington Communications Capability

- SBU (Sensitive but Unclassified, with Internet Access)
- EPS (Enhanced Process System), (DE front end, processes orders not imagery)
- JWICS (TS/SI/TK, Intelink, Green) - (Aug 00)
- SCEN - TBR FY01 (Secret Collateral Enterprise Network (Connectivity; no equipment))
- SIPRNET via SCEN - TBR FY01
- VTC - JWICS (Campus System)
- VTC (ITF Specific) - FY01
- Fully integrated LAN between all NIMA-developed segments
- TELECON (Clear and Secure)

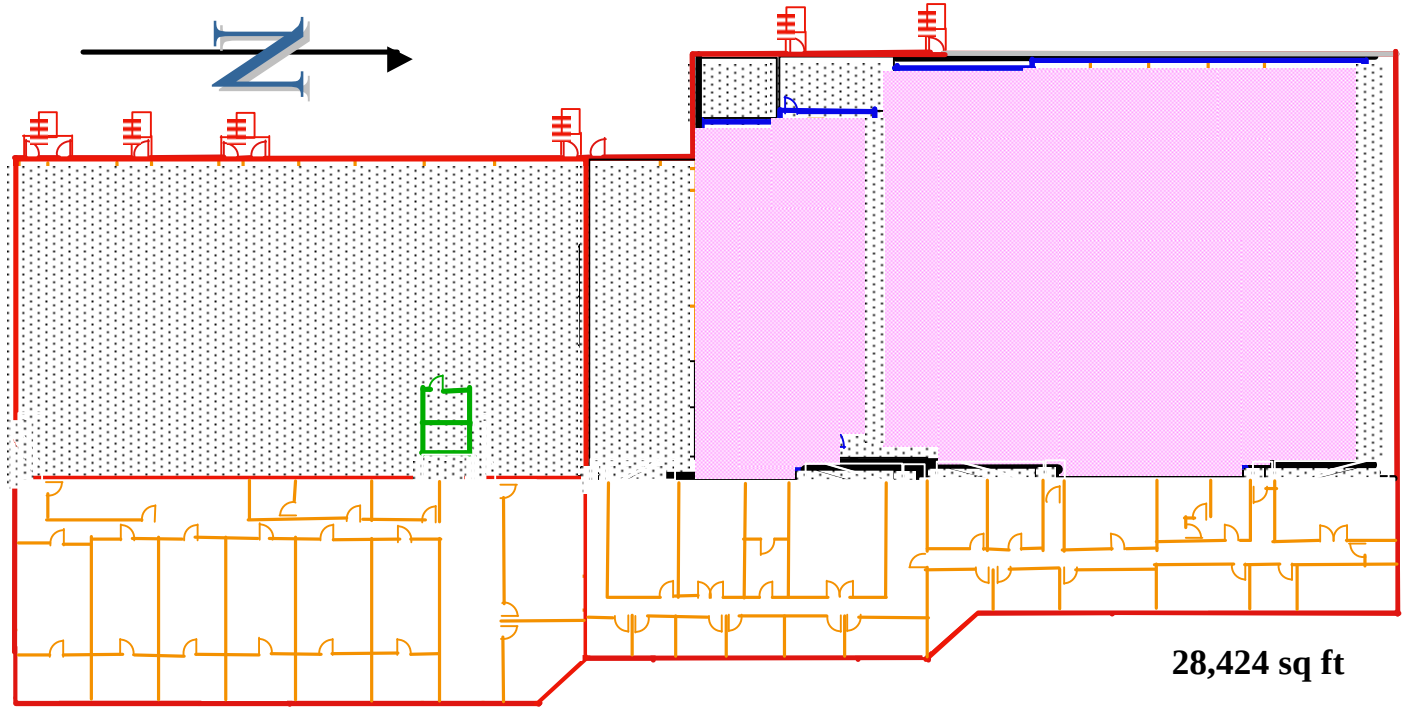
Current Newington Campus Layout



ITF-Newington Facility Layout



ITF Expansion-8510 Overview

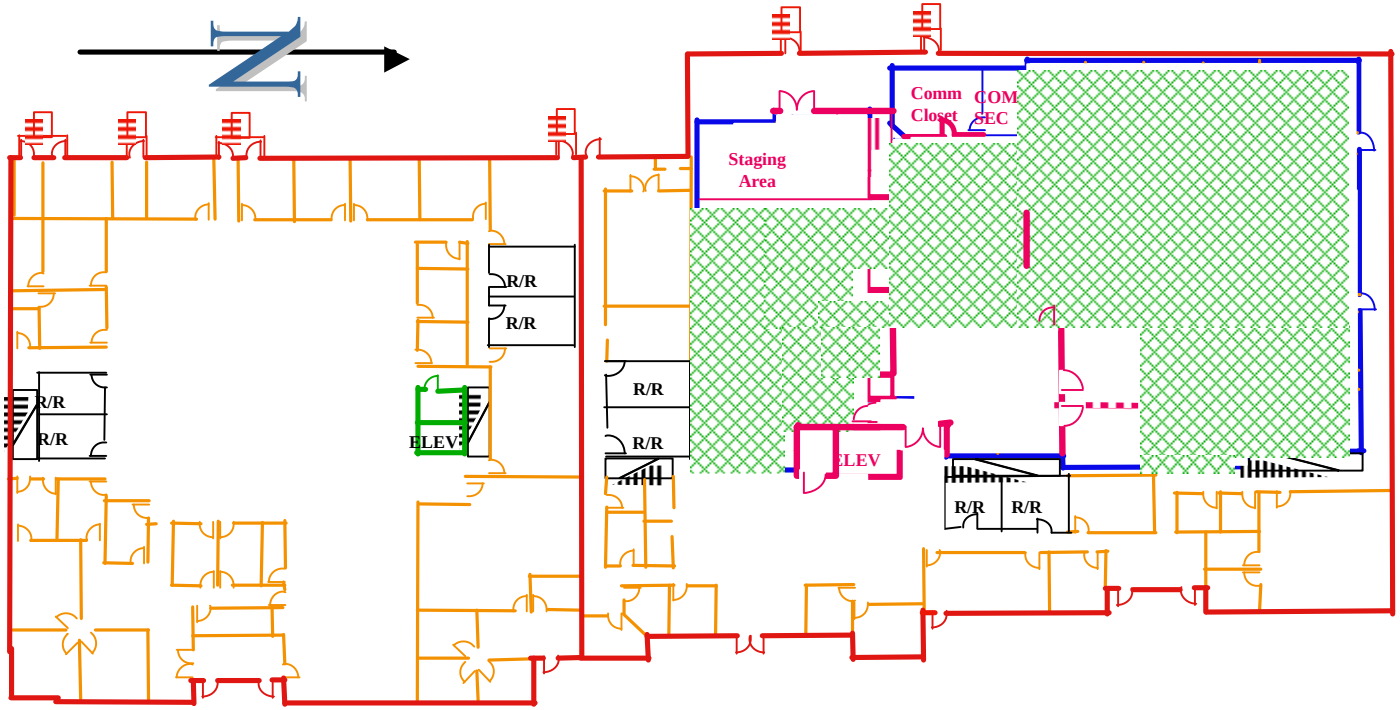


Suite 300 (South) **21,500 sq ft** **Suite 1000 (North)**

Expansion-Phase I

- **Phase 1 - Lab**
  - Occupancy 1 March 00
  - Construction
    - Computer Room & Operations Center
    - Communications & Phone Closets
    - Test & Evaluation and Demonstration Rooms
  - Power, Air Conditioning and UPS
    - Modular for Expansion, Supports Later Phases
    - Sufficient for Phase 1
  - Use Realtor's Investment Funds (ADA)
    - Rebuild Entrance
    - Add Second Elevator
    - Add Additional Restrooms

Expansion-Phase I

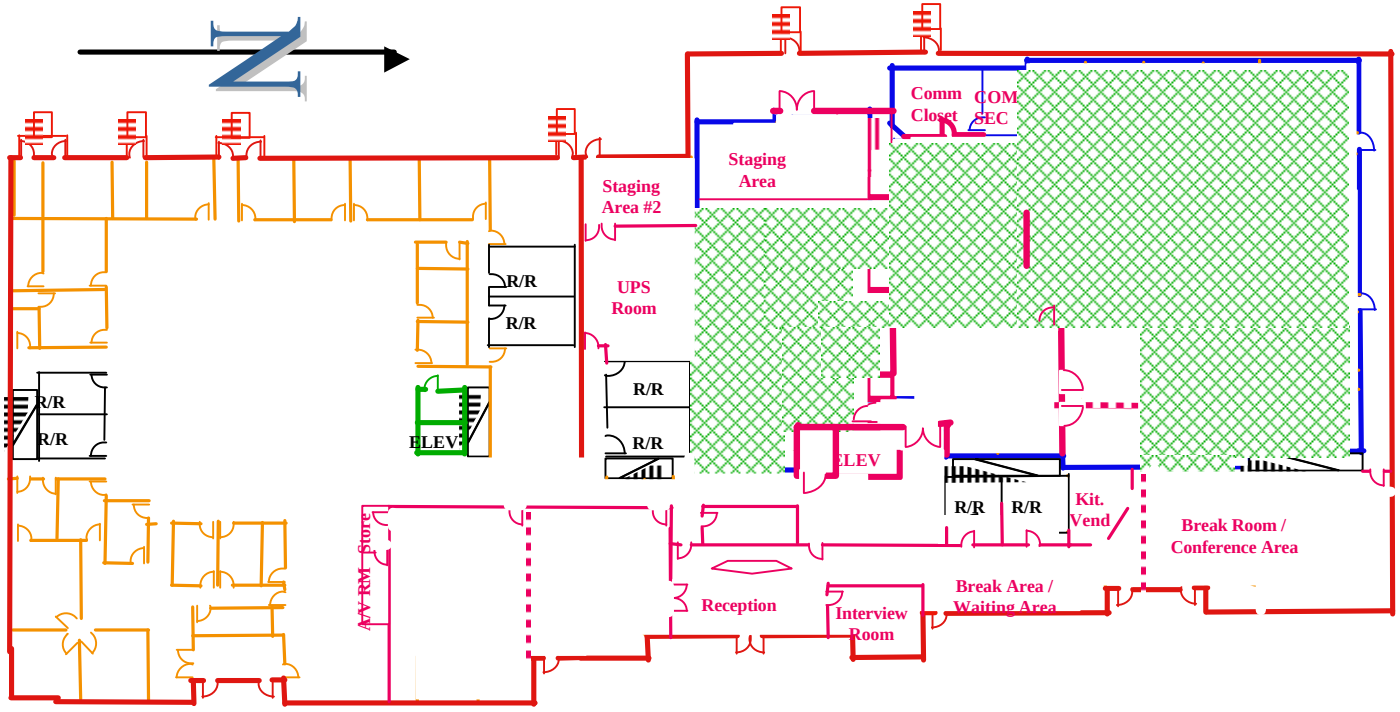


Suite 300 (South) **Suite 1000 (North)**

Expansion-Phase II

- **Phase 2 (FY 01) - North Suite**
  - Areas Covered
    - Conference Rooms
    - Workstation / Training Rooms
    - Amenities (Kitchens, Break Areas)
    - Offices (Includes Security and CM)
    - Reception Area
  - Additional Power, Air Conditioning and UPS
    - Modular for Expansion
    - Supports Later Phases

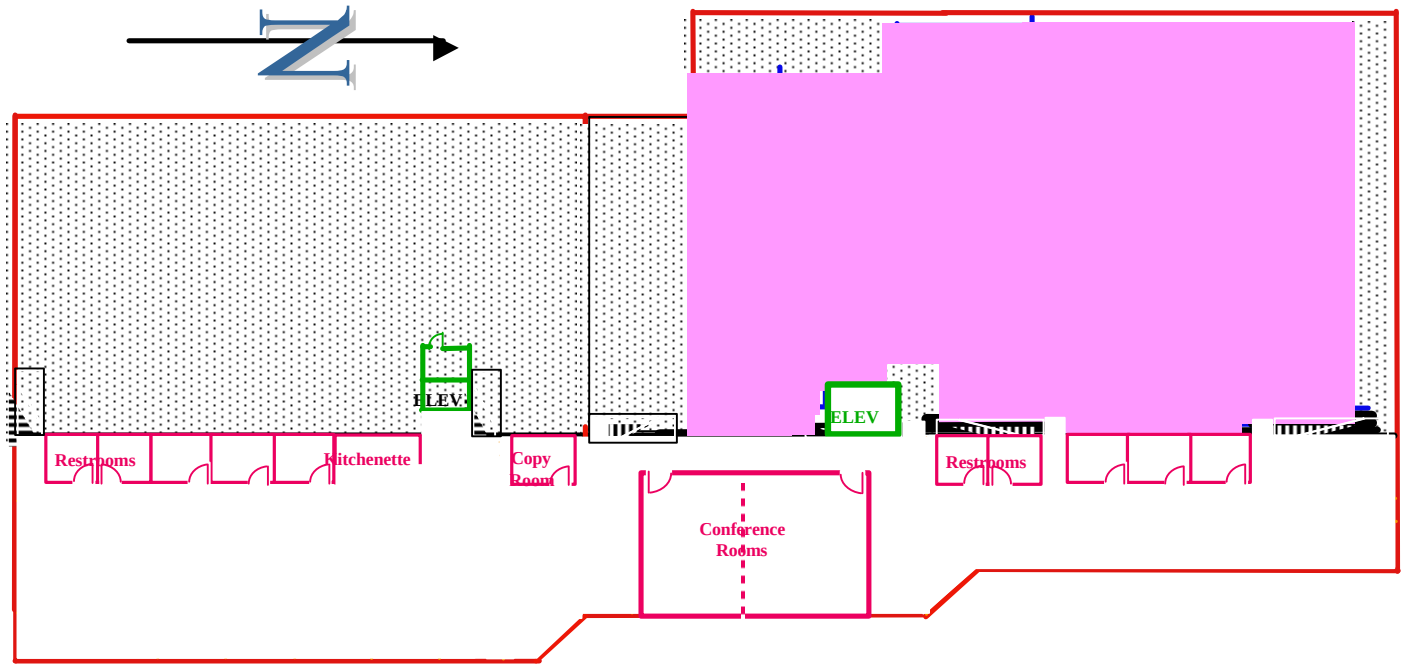
Expansion-Phase II



Suite 300 (South)

Suite 1000 (North)

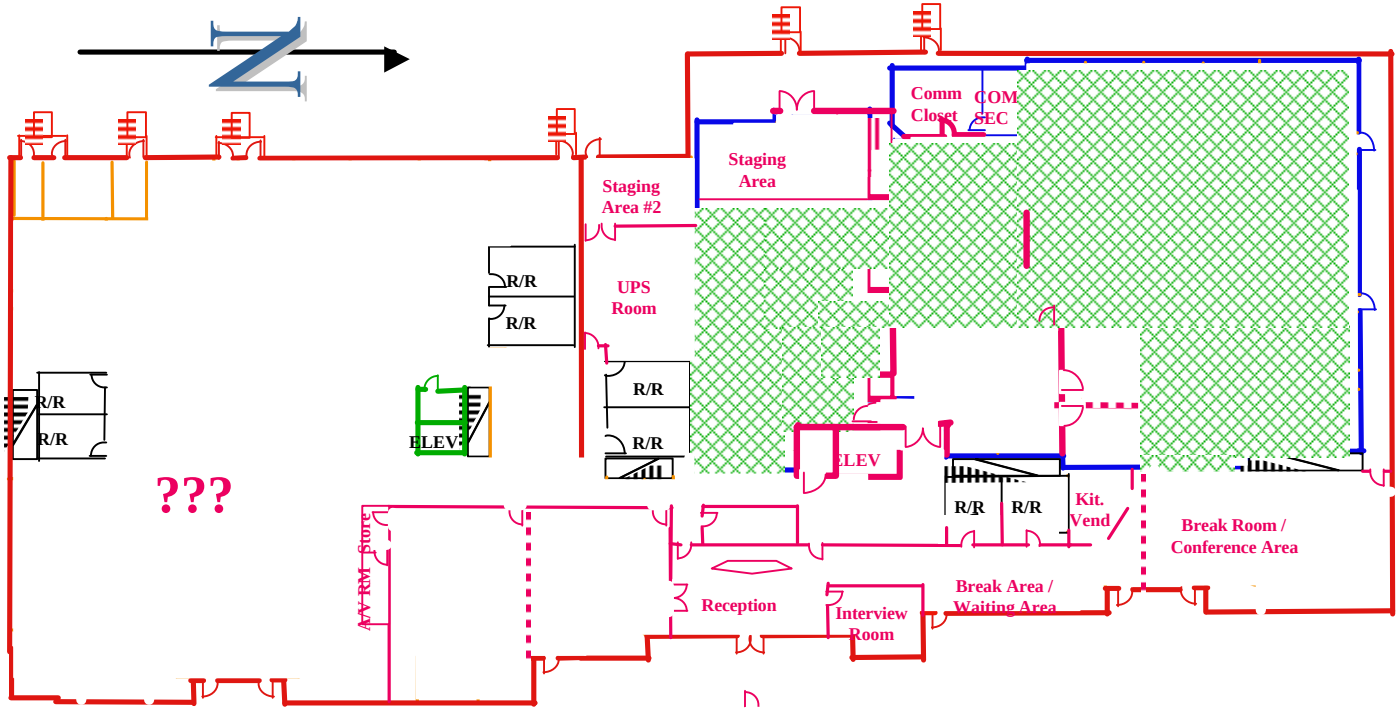
Expansion-Phase II



Expansion-Phase III

- **Phase 3 (FY02) - South Suite**
  - Areas Covered
    - Remaining Offices
    - Visitor bullpens
    - Identified partners
  - Includes additional power, air conditioning and UPS
  - Completes build-out

Expansion-Phase III



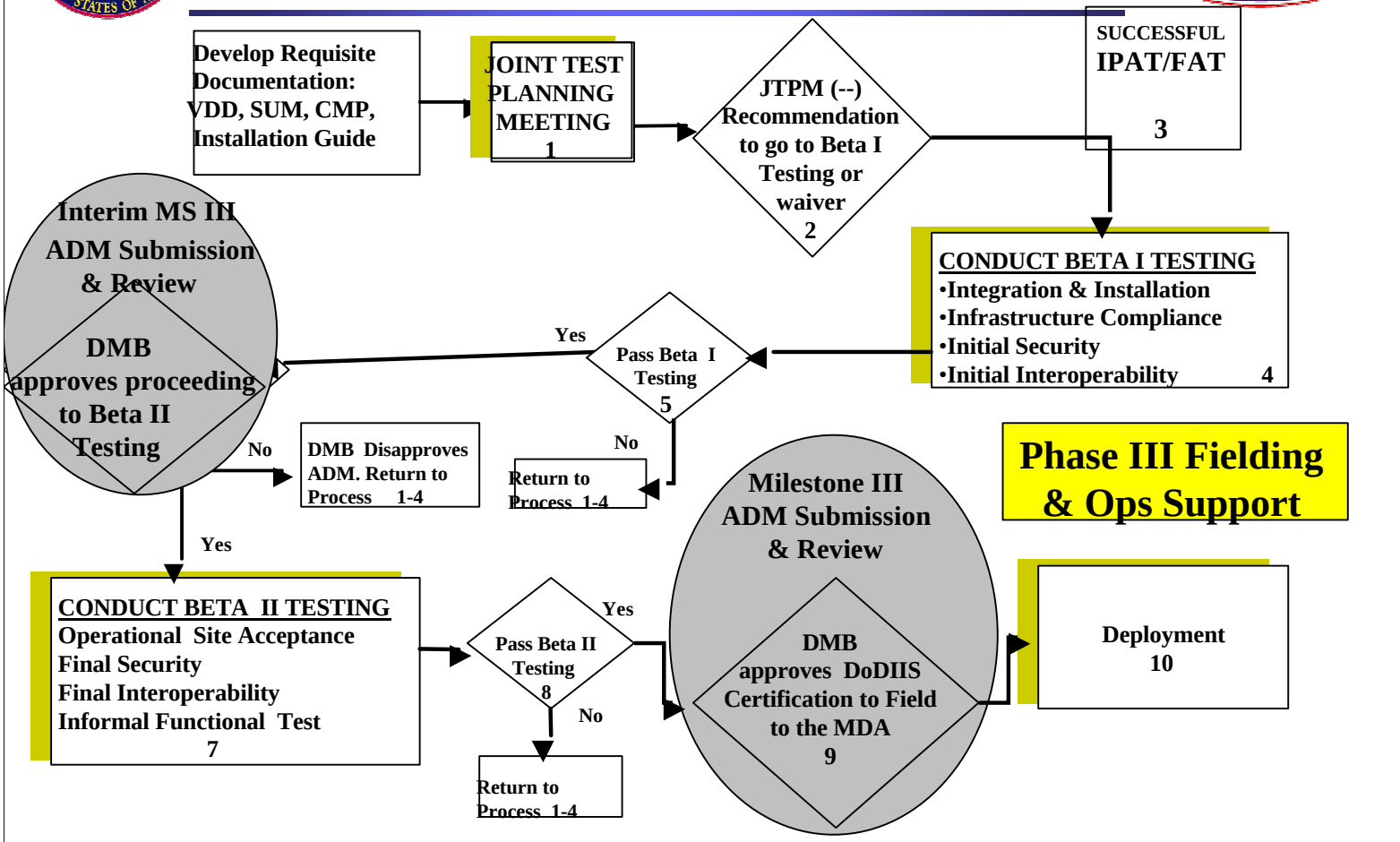
Suite 300 (South) **Suite 1000 (North)**

ITF Community Partnerships

- **External Certification Organizations**
  - DOD Intelligence Information System (DoDIIS) Management Board
    - Joint Interoperability Test Command
    - Joint Integration Test Facility
  - Community Imagery Training Council
  - Defense Intelligence Agency, external security agencies
- **Commands**
  - Provide input to TEMs and test plans to ensure test accuracy
  - Provide input to system training tasks and objectives
  - Verify operational procedures (to develop accurate test scenarios)

BUSINESS AS USUAL

DoDIIS LCM PROCESS



Summary

- The NIMA Integration Test Facility is responsible for a key process that ensures that NIMA delivers to the customer the right tools and information, in the right format, at the right time…Guaranteeing the information edge
- NIMA is committed to this current approach and investment strategy
- ITF is fully funded
- NIMA is willing to entertain other community initiatives to optimize long term investment and processes

Backup Slides

Roles and Responsibilities

- **USIGS Program Manager**
  - NIMA Director for Systems and Technology, Systems Office
  - Responsible for the overall USIGS Program test and evaluation activities.
- **USIGS Segment Program Managers**
  - USIGS Segment Program Managers are responsible for DT&E for their segment and supporting other phases of test and evaluation related to that segment.
- **USIGS Project Leader**
  - Appointed and delegated by the USIGS PM
  - Enterprise-level integration, scheduling, coordination and recommending the appropriate level of project test and evaluation to the USIGS PM
  - Coordinating with the DMB and drafting the Project's System Decision Memorandum
  - Coordinating test and evaluation support from the developing organization(s), testing organization(s), and operational users

Roles and Responsibilities

- **NIMA Integration Test Facility (ITF)**
  - Supporting integration test activities; planning, coordinating, and conducting and reporting (USIGS) enterprise–level functionality testing.
  - Responsible for providing a test environment to support enterprise- level testing to include functionality, integration, security, and interoperability testing.
  - Responsible for coordinating JITF, JITC, and DIA/MSSA testing activities.
  - Responsible for maintaining configuration management and baseline control of the USIGS system software that enter the ITF and of the ITF testbed architecture.

Roles and Responsibilities

- **Joint Interoperability Test Command (JITC)**
  - The JITC is responsible for planning, executing, and reporting the results of NITF certification and joint interoperability testing and certification activities.
  - The JITC will plan, execute, and report the results of interoperability testing. Their primary mission is to ensure joint interoperability of DoD systems. JITC will include system tests of standard procedures as extracted from the DoDIIS features set for information systems and interface testing. The JITC will report their findings to the USIGS Program Manager and to the DMB. The JITC will report on the projects or segments readiness to deploy to a Beta II site based upon preliminary testing at the ITF. Final JITC interoperability certification will occur at the completion of Beta II/O&TE.

Roles and Responsibilities

- **Joint Integrated Test Facility (JITF)**
  - The JITF is responsible for planning, executing, and reporting the results of DoDIIS client server environment (CSE)/common operating environment (COE), and software application installation testing and certification activities.
  - The JITF will plan, execute, and report the results of integration testing. The JITF evaluates the installation process, integration of the applications (CSE/COE), and documentation. The JITF will report their findings to the USIGS Program Manager and to the DMB. An interim JITF certification will be obtained through successful testing conducted at the Developing organization or at the ITF, depending on the testing phase.

Roles and Responsibilities

- **NIMA Security (MSSA) (Continued.)**
  - Items must be tested:
    - System discretionary access controls, Audit capabilities, User ID/authentication, Data integrity, System integrity, Data labeling
  - The NIMA Security Office
    - will provide security technical and policy guidance to requesting parties
    - Perform security testing and evaluations on new or modified AISs
    - Granting IATO for AISs pending final decision by the Director, DIA
    - Providing accreditation recommendations to DIA for those systems and sites under their purview

Roles and Responsibilities

- **NIMA Security (MSSA)**
  - MSSA is responsible for coordinating with the Defense Intelligence Agency for the planning, executing, and reporting the results of system security testing and certification activities.
  - DIA is responsible is responsible for system security certification and accreditation. NIMA MSSA will coordinate with DIA and the Service's security accreditation agencies to ensure NIMA systems' achieves AIS Security Certification. DIA has delegated security testing to NIMA MSSA for planning, coordination and execution. NIMA MSSA will work with the Project IPT and ITF to develop appropriate tests to determine the adequacy of the systems security features. It must be evaluated against the criteria of DCID 6/3, DIAM 50-4, and DoDD 5200.28. System accreditation documents must be reviewed (CONOPS, security architecture, security requirements, design analysis, test plan, and test procedures). The functionality of the security design must be tested to ensure that all features work as accurately and completely as intended.

Roles and Responsibilities

- **Milestone Decision Authority (MDA)**
  - NIMA Deputy Director, Systems and Technology
  - Approves tailored milestone decision points for each acquisition program. The PM develops each milestone with the corresponding entrance and exit criteria and submits them to the MDA for approval. At each milestone or program review, the MDA will determine if the acquisition is progressing satisfactorily based, in part, on the exit criteria.
- **Department of Defense Intelligence Information System (DoDIIS) Management Board (DMB)**
  - The DMB is responsible for providing an approval/disapproval for a DoDIIS Migration System, such as USIGS project or a USIGS segment, to proceed to Beta II-site deployment for OT&E. The DMB is also responsible for reviewing the Beta II/OT&E Test Reports and the Acquisition System Decision Memorandum that supports a Milestone III decision associated with a DoDIIS Migration System.